Draft
Air Toxic Control Measure (ATCM)
For Portable Diesel-Fueled Engines
10/3/03

Please Note: This draft regulation is an Air Resources Board (ARB) staff proposal. Portions of this regulation may be subject to change, including compliance dates and requirements. ARB staff is soliciting comments on the draft regulation and based upon comments received and further staff analysis, parts or all of the draft regulation may change.

93105.1 PURPOSE

The purpose of this airborne toxic control measure (ATCM) is to reduce diesel particulate matter (PM) emissions from portable diesel-fueled engines having a rated brake horsepower greater than 50 (> 50 hp).

93105.2 APPLICABILITY

(1) Except as provided below, all applicable portable engines having a maximum rated capacity greater than 50 bhp and fueled with diesel are subject to this regulation.

(2) The following are not subject to this regulation:

(a) Any engine used to propel mobile equipment or a motor vehicle of any kind;

(b) Any portable engine using an alternative fuel;

(c) Any engine not meeting the definition of portable as defined in 93105.3, Definitions, of this regulation;

(d) Military tactical support equipment;

(e) Diesel pile-driving hammers;

(f) Ground support equipment at airports whose diesel PM emissions are regulated by an enforceable Memorandum of Understanding (MOU) with the local air district or Air Resources Board; and

(g) Portable engines operated on either San Clemente or San Nicolas Island.

93105.3 DEFINITIONS

(1) **Air Contaminant** means any discharge, release, or other propagation into the atmosphere which includes, but is not limited to, smoke, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids, or any combination thereof.

(2) **Air Pollution Control Officer** means the Executive Officer or director of a district, or his/her delegate.

(3) **Alternative fuel** means natural gas, propane, ethanol, or methanol.

(4) **Alternative Diesel Fuel** means any fuel used in a CI engine that is not a reformulated CARB diesel fuel as defined in Title 13 CCR Sections 2281 and 2282 or an alternative fuel, and does not require engine or fuel system modifications for the engine to operate, although minor modifications (e.g., recalibration of the engine fuel control) may enhance performance. Examples of alternative diesel fuels include, but are not limited to, biodiesel, Fischer Tropsch fuels, and emulsions of water in diesel fuel. An emission control strategy using a fuel additive will be treated as an alternative diesel fuel based strategy unless:

(A) the additive is supplied to the engine fuel by an on-board dosing mechanism, or

(B) the additive is directly mixed into the base fuel inside the fuel tank of the engine, or

(C) the additive and base fuel are not mixed until engine fueling commences, and no more additive plus base fuel combination is mixed than required for a single fueling of a single engine.

(5) **CARB Diesel Fuel** means any diesel fuel that meets the specifications defined in subsection (e)(12) and meets the specifications defined in *Title 13 CCR sections 2281, 2282, and 2284*.

(6) **Certified Nonroad Engine** refers to engines manufactured to satisfy an applicable nonroad engine emission standard as set forth in Title 13 of the California Code of Regulations or CFR 40 Part 89.

(7) Diesel Particulate Matter (PM) means the particles found in the exhaust of diesel-fueled CI engines which may agglomerate and adsorb other species to form structures of complex physical and chemical properties.

(8) District means an air pollution control district or air quality management district created or continued in existence pursuant to provisions of Part 3 (commencing with section 40000) of the California Health and Safety Code.

(9) Engine means any piston driven internal combustion engine.

(10) Executive Officer means the Executive Officer of the California Air Resources Board or his / her designee.

(11) Fleet refers to an engine or group of engines under the same ownership or operation, or which are owned or operated by entities which are under common control.

(12) Fuel additive means any substance designed to be added to fuel or fuel systems or other engine-related systems such that it is present in-cylinder during combustion and has any of the following effects: decreased emissions, improved fuel economy, increased performance of the entire vehicle or one of its component parts, or any combination thereof; or assists diesel emission control strategies in decreasing emissions, or improving fuel economy or increasing performance of a vehicle or component part, or any combination thereof. Fuel additives used in conjunction with diesel fuel may be treated as an alternative diesel fuel.

(13) Level 3 Verified Technology means a technology that has satisfied the requirements of the "Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines" in title 13, California Code of Regulations, commencing with section 2700 and has demonstrated an reduction in diesel particulate matter of 85% or greater.

(14) Location means any single site at a building, structure, facility, or installation.

(15) Maximum Rated Horsepower (brake horsepower (bhp)) is the maximum brake horsepower rating specified by the portable engine manufacturer for continuous duty and listed on the nameplate of the portable engine.

(16) New Nonroad Engine means a domestic or imported nonroad engine, the equitable or legal title to which has never been transferred to an ultimate purchaser. If the equitable or legal title to an engine is not transferred to an ultimate purchaser until after the engine is placed into service, then the

engine will no longer be new after it is placed into service. A nonroad engine is placed into service when it is used for its functional purposes. The term ultimate purchaser means, with respect to a new nonroad engine, the first person who in good faith purchases a new nonroad vehicle or a new nonroad engine for purposes other than resale.

(17) Nonroad Engine means:

(A) Except as discussed in paragraph (B) of this definition, a nonroad engine is any engine:

(1) in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

(2) in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(3) that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(B) An engine is not a nonroad engine if:

(1) the engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the federal Clean Air Act; or

(2) the engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the federal Clean Air Act; or

(3) the engine otherwise included in paragraph (A)(3) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that

remains in a single location on a permanent basis (at least two years) and that operates at that single location approximately three (or more) months each year.

(18) Off-Road Engine means the same as nonroad engine.

(19) Outer Continental Shelf (OCS) shall have the meaning provided by section 2 of the Outer Continental Shelf Lands Act (43 U.S.C. Section 1331 et seq.).

(20) Permit refers to a certificate issued by the Air Pollution Control Officer acknowledging expected compliance with the applicable requirements of the districts rules and regulations.

(21) Portable means designed and capable of being carried or moved from one location to another. Indicia of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. For the purposes of this regulation, dredge engines on a boat or barge are considered portable. The engine is not portable if any of the following are true:

(A) the engine or its replacement is attached to a foundation, or if not so attached, will reside at the same location for more than 12 consecutive months. Any engine such as back-up or stand-by engines, that replace engine(s) at a location, and is intended to perform the same or similar function as the engine(s) being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of all engine(s) or, including the time between the removal of the original engine(s) and installation of the replacement engine(s), will be counted toward the consecutive time period; or

(B) the engine remains or will reside at a location for less than 12 consecutive months if the engine is located at a seasonal source and operates during the full annual operating period of the seasonal source, where a seasonal source is a stationary source that remains in a single location on a permanent basis (at least two years) and that operates at that single location at least three months each year; or

(C) the engine is moved from one location to another in an attempt to circumvent the portable residence time requirements.

[Note: The period during which the engine is maintained at a storage facility shall be excluded from the residency time determination.]

(22) Registration refers to either:

(A) a certificate issued by the Executive Officer acknowledging expected compliance with the applicable requirements of the Statewide Portable Equipment Registration Program; or

(B) a certificate issued by the Air Pollution Control Officer acknowledging expected compliance with the applicable requirements of the district's Portable Equipment Registration Program.

(23) Responsible Official refers to an individual employed by the company with the authority to certify that the portable engines under his/her jurisdiction complies with applicable requirements of this regulation. A contracted designee cannot certify compliance in lieu of the responsible official.

(24) Selective Catalytic Reduction (SCR) System refers to an air pollution control system which utilizes a proprietary base metal catalyst designed to reduce emissions of oxides of nitrogen (NOX).

(25) Stationary Source means any building, structure, facility or installation which emits any affected pollutant directly or as a fugitive emission. Building, structure, facility, or installation includes all pollutant emitting activities which:

(A) are under the same ownership or operation, or which are owned or operated by entities which are under common control;

(B) belong to the same industrial grouping either by virtue of falling within the same two-digit standard industrial classification code or by virtue of being part of a common industrial process, manufacturing process, or connected process involving a common raw material; and

(C) are located on one or more contiguous or adjacent properties.

[Note: For the purposes of this regulation a stationary source and nonroad engine are mutually exclusive.]

(26) Storage means a warehouse, enclosed yard, or other area established for the primary purpose of maintaining portable engines when not in operation.

(27) Tactical Support Equipment (TSE) means equipment using a portable engine, including turbines, that meets military specifications, owned by the U.S. Department of Defense and/or the U.S. military services or its allies, and used in combat, combat support, combat service support, tactical or

relief operations, or training for such operations. Examples include, but are not limited to, internal combustion engines associated with portable generators, aircraft start carts, heaters and lighting carts.

(28) Tier 4 emission standards refers to the final emission standards adopted by the U.S. EPA and CARB for newly manufactured off-road engines designed to achieve the lowest diesel PM emissions.

(29) Transportable means the same as portable.

(30) Verified emission control strategy refers to a diesel emission control strategy or system that has received approval from the Executive Officer according to the "Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines" in title 13, California Code of Regulations, commencing with section 2700, and incorporated by reference.

(31) Volatile Organic Compound (VOC) means any compound containing at least one atom of carbon except for the following exempt compounds: acetone, ethane, parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene), methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, methylene chloride (dichloromethane), methyl chloroform (1,1,1-trichloroethane), CFC-113 (trichlorotrifluoroethane), CFC-11 (trichlorofluoromethane), CFC-12 (dichlorodifluoromethane), CFC-22 (chlorodifluoromethane), CFC-23 (trifluoromethane), CFC-114 (dichlorotetrafluoroethane), CFC-115 (chloropentafluoroethane), HCFC-123 (dichlorotrifluoroethane), HFC-134a (tetrafluoroethane), HCFC-141b (dichlorofluoroethane), HCFC-142b (chlorodifluoroethane), HCFC-124 (chlorotetrafluoroethane), HFC-23 (trifluoromethane), HFC-134 (tetrafluoroethane), HFC-125 (pentafluoroethane), HFC-143a (trifluoroethane), HFC-152a (difluoroethane), cyclic, branched, or linear completely methylated siloxanes, the following classes of perfluorocarbons:

(A) cyclic, branched, or linear, completely fluorinated alkanes;

(B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

(C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

(D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine, acetone, ethane, and parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene).

(32) U.S. EPA refers to the United States Environmental Protection Agency.

93105.4 REQUIREMENTS

(1) Diesel-fueled portable diesel-fueled engines can only use the following fuels:

(A) CARB diesel fuel; or

(B) alternative diesel fuel that have been verified through the Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines; or

(C) CARB diesel fuel utilizing fuel additives that have been verified through the Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines.

[Note that credit for diesel PM reductions for CARB diesel fuel blends that use biodiesel, Fischer Tropsch fuels, or emulsions of water in diesel fuel is available only for fuel blends that have satisfied the requirements of the Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines. The credit granted is based upon the verified level approved by the Executive Officer within the Executive Order for the fuel blend.]

(2) Except as provided in (3) and (4) of this section, for applications filed to initially register or permit a diesel-fueled portable engine after the effective date of this regulation, the portable engine must satisfy one of the following:

(A) be certified to an emissions standards applicable for newly manufactured nonroad engines pursuant to 40 CFR Part 89 or Title 13 of the California Code of Regulations; or

(B) if the portable engine is not certified to a nonroad engine emissions standard, satisfy the applicable operating restriction requirements contained in (8) of this section. The operating restrictions shall remain effective until the initial fleet requirements become effective in 2008.

(3) The operating restrictions required by (2)(B) above does not apply to diesel-fueled portable engines that have not been subject to district permitting requirements prior to January 1st, 2004.

(4) For applications filed to initially register or permit a diesel-fueled portable engine after January 1st 2008, the portable engine must meet the most stringent federal or California emission standard for nonroad engines pursuant to 40 CFR Part 89 or Title 13 of the California Code of Regulations.

(5) Districts may require additional operational restrictions through district permits or other means deemed enforceable by the district for engines registered with the Statewide Portable Equipment Registration Program at a specific location if operation of the engines at that location has resulted in a public nuisance, as defined in Health and Safety Code Section 41700.

(6) Fleet Requirements

(A) Each fleet is subject to and must comply with the following weighted PM emission fleet averages (expressed as g/bhp-hr) by the listed compliance dates:

Fleet Standard Compliance Date	All Engines with Horsepower <175	All Engines with Horsepower ≥175
1/1/08	0.5	0.28
1/1/10	0.4	0.21
1/1/15	0.2	0.08
1/1/20	0.04	0.02

(B) For the purposes of this regulation, the fleet will include all diesel-fueled portable engines of a company operated in California, including portable engines registered with the Statewide Portable Equipment Registration Program or permitted with local districts. The California fleet will be further divided into engines rated at less than 175 horsepower and engines that are 175 horsepower and larger. Each portion of the fleet would be subject to the above fleet emission standards.

(1) Portable diesel-fueled engines operated outside of California or operated only within the OCS can be excluded from a company's fleet average.

(2) Portable alternative-fueled engines can be included in a company's fleet average if the engine satisfies the requirements in (8)(B)(3) of this section.

(3) Beginning on January 1, 2008, the weighted average PM emission rate for the fleet cannot exceed the fleet standard that

is in effect. Changes to the fleet including purchasing new engines to add to the fleet or the sale of engines within the fleet does not exempt the fleet from this requirement.

(C) The diesel PM fleet emission standards in (7)(A) of this section does not apply to diesel-fueled portable engines equipped with properly operating SCR systems as of January 1st, 2004. After January 1st, 2004, the Executive Officer may exempt, on a case-by-case basis, portable engines equipped with SCR systems from the fleet emission standards.

For all diesel-fueled portable engines equipped with SCR systems, the following information must be submitted to the Executive Officer to demonstrate that the SCR system is operating properly:

(1) Tests results for NOx, PM, and ammonia slip. The measurements must be conducted with ARB or district approved test methods. Testing shall be performed, at a minimum, every three years; and

(2) The Responsible Official certifies that the SCR system is complying with applicable district or Statewide Portable Equipment Registration Program requirements. The certification shall be filed annually.

(D) The diesel PM fleet emission standards in (7)(A) of this section are not applicable if the following requirements are satisfied:

(1) the entire fleet is comprised of five or fewer diesel-fueled portable engines, including engines that are less than 175 horsepower and engines that are 175 horsepower and larger; and

(2) the owner submits written notification that the entire fleet will be replaced with portable engines certified to Tier 4 emission standards for federally- or California- certified newly manufactured nonroad engines pursuant to 40 CFR Part 89 or Title 13 of the California Code of Regulations; and

(3) for each class and category of nonroad engine, the replacement must occur within two years of the first engine being offered for sale that satisfies the Tier IV standards.

(E) The fleet averages can be satisfied with implementation of, but not limited to, the following options: engine replacement, engine repower, use of a verified alternative diesel fuel, use of a verified fuel

additive, addition of a verified control system, replacement of a diesel engine with an engine using an alternative fuel, or electrification. The weighted fleet PM emission average is determined by following the procedure given in (7) of this section, Fleet Average Calculation.

(7) Fleet Average Calculations

(A) General Provisions

(1) The average PM emission factor for the fleet is determined by the following formula:

$$\frac{\sum \text{Summation for each engine in the fleet (hp x emission factor)}}{\sum \text{Summation for each engine in the fleet (hp)}}$$

where:

hp = horsepower at maximum rated capacity.

emission factor = diesel pm emission rate, as determined below:

(2) The following diesel PM emission rates can be used with the above formula to determine the weighted average fleet emission rate:

(a) for diesel-fueled portable engines certified to a nonroad engine standard, the results of emission measurements submitted to either the U.S. EPA or CARB for the purposes of satisfying the appropriate emission standard; or

(b) for diesel-fueled portable engines that are not certified to a U.S. EPA or CARB emission standard for newly manufactured nonroad engine, except as allowed in (c), the appropriate emission factors from Appendix A; or

(c) Results from approved emission tests can be used for diesel-fueled portable engines that are greater than 750 horsepower and manufactured prior to January 1st, 2000. The emission test must meet the following requirements:

(1) the measurements shall be conducted with approved ARB test methods; and

(2) the duration of the emissions test is sufficient to document the typical operation of the engine; and

(3) approval of the test protocol must be obtained from the Executive Officer prior to conducting the emission testing; and

(4) provide notice, at least a week prior to the testing, regarding the location and dates of testing to the APCO of the appropriate district(s) and the Executive Officer; and

(5) complete initial testing prior to July 1st, 2005.

Unless the engine is retired from service, follow-up testing must be performed, at a minimum, every three years.

(3) Results from emission measurements from a verification approved by the Executive Officer for an emission control system or strategy can be used in conjunction with (2).

(B) The following incentives can be used to revise the fleet average, as outlined below:

(1) Credit can be given toward satisfying the 1/1/10 diesel PM fleet standard for non-certified engines that are replaced with engines certified to the Tier 4 off-road engine standards.

(a) To receive the credit, the following conditions must be satisfied:

(1) The owner submits written notification that specific engines are to be replaced with engines certified to the Tier 4 newly manufactured off-road engine standards; and

(2) For each class and category of diesel fueled nonroad engine, the replacement must occur within one year of the first engine being offered for sale which satisfies the Tier 4 standards. If the engine is not replaced within this time period, the permit or registration is revoked.

(b) For the purposes of the weighted fleet average determination, engines satisfying these requirements can use the emission rate of the Tier 4 engine.

(2) For dredges, portable aggregate plants, and portable concrete batch plants that use grid power for more than 200 hours in lieu of operating diesel engines for a given project, the time period grid power is used can be used to reduce each affected engine's emission factor. The emission factor for each affected engine will be reduced proportionally by the percentage of time the equipment uses grid power. To receive credit for grid power in the fleet calculation, the recordkeeping and reporting requirements in Section 93105.5 must be satisfied.

(3) Alternative fueled portable engines operating 100 or more hours can be included toward determining compliance with the applicable fleet emission standards.

(8) An uncertified portable engine subject to the operating restrictions, per 93105.4 (2)(B), cannot exceed the annual operating limits specified in Table 1 for each district within which the portable engine is operated**.** The operating restrictions are no longer effective beginning January 1st, 2008, and later. Other operating restrictions in a valid permit or registration may still apply. This provision does not apply to uncertified portable engines that have valid registrations or permits as of 1/1/04.

Table 1
Annual Operation Limitations (Hours/year) for
Non-certified Engines

	PM Emission Rate (g/bhp-hr)				
Engine horsepower	**0.84**	**0.75**	**0.63**	**0.55**	**0.38**
50-99	75	75	100	100	150
100-300	NA	30	40	40	50
>300	NA	20	30	30	40

93105.5 RECORDKEEPING AND REPORTING

(1) A fleet is not subject to the requirements of this section if **all** the portable diesel-fueled engines of the fleet satisfy either one of the following requirements:

(A) the engine is certified to tier IV emission standards for newly manufactured off-road engines; or

(B) the engine is equipped with a properly functioning level-3 verified emission control system.

Fleets that include diesel-fueled portable engines equipped with properly operating SCR systems, as of January 1st, 2004, can exclude these engines from the above determination.

(2) The following recordkeeping requirements become effective 1/1/05:

(A) For all diesel-fueled portable engines subject to operating restrictions, the records shall meet the following requirements:

(1) the period for reporting shall be a calendar year (January 1st through December 31st); and

(2) the owner/operator shall maintain records indicating the annual hours of operation for each district within which the engine operates.

(B) For alternative-fueled portable engines used as part of a company's fleet average, total hours of operation must be maintained on an annual basis. If the engine is used out-of-state, then the records shall only account for operation within California, excluding operation within the OCS.

(C) The follow requirements must be satisfied for electrification to be used in determining the fleet average,

(1) the owner/operator must give notification to the Executive Officer identifying the dates, location, duration of the project, and a description of the project that will rely on electrification instead of using diesel engines. The notification must be provided prior to the start of the project; and

(2) identify each affected engine, including: make, model, serial number, year of manufacture for each engine, and emission factor (g/hp-hr); and

(3) the records for each affected engine must clearly identify the electrification activity, including indicating the amount of electricity used and the time period for the project; and

(4) the owner/operator must retain copies of contracts or other documentation, with the project proponent and/or applicable utility, supporting the use of grid power. Copies of the

documentation must be submitted with the Statement of Compliance.

(D) For diesel-fueled portable engines used in conjunction with a electrification project pursuant to the above electrification provisions, total hours of operation must be maintained on an annual basis for each year the electrification provision is used in a company's fleet average.

(E) Records for the fleet and affected individual portable engines shall be maintained at a central place of business for five years. These records are to be made available, upon request for inspection, to local air pollution control district or CARB personnel. The requested records must be provided to the appropriate personnel within 72 hours of the request. The records shall satisfy the following requirements:

(1) identify each engine in the fleet, including: make, model, serial number, year of manufacture for each engine, and emission factor (g/hp-hr) to be used for each engine in the fleet average determination; and

(2) identify engines that are added or have been removed from the fleet, including make, model, serial number, and year of manufacture for each engine;

(3) identify portable engines that operated solely out-of-state or solely within the OCS.

(F) Each portable engine subject to operating restrictions shall be equipped with an operational and properly maintained non-resettable hour-meter.

(3) The responsible official of the fleet shall provide the following reports as identified below to the Executive Officer:

(A) A status report, due to the Executive Officer by March 1, 2006 that includes the following items:

(1) The fleet's weighted average PM emission rate for the 2005 calendar year, including a summary for each engine that is part of the fleet, each engine's emission rate (g/bhp-hr); and

(2) Inventory of portable engines in the fleet identifying whether the engine is state-registered, permitted with the district, or as of 1/1/04, was exempt from permit requirements for all districts

within which the engine was operated. The inventory shall identify the make, model, serial number, year of manufacture for each engine, and emission factor (g/hp-hr) for each engine to be used in the fleet average determination

(B) A statement of compliance signed by the responsible official that the fleet standards are being achieved and a summary that include each engine's emission rate (g/bhp-hr) that is part of the fleet at the time the fleet standard becomes effective. The statements of compliance are due to the Executive Officer by the following dates:

(1) 3/1/08 for the fleet standards that become effective 1/1/08;

(2) 3/1/10 for the fleet standards that become effective 1/1/10; and

(3) 3/1/15 for the fleet standards that become effective 1/1/15.

(C) The responsible official shall identify to the Executive Officer, as part of the 2008 statement of compliance report, the specific engines in the fleet that will be replaced with Tier IV engines or alternative fueled engines. The list shall include for each engine being replaced the following information: the make, model, serial number, year of manufacture for each engine, and emission factor (g/hp-hr) used for the company's fleet average.

(D) After 3/1/08, the APCO or the Executive Officer can require the submittal of information demonstrating compliance with the applicable fleet standard. Upon receiving the request, the owner/operator shall provide the requested information within 30 days.

93105.6 ENFORCEMENT OF FLEET REQUIREMENTS

(1) Both the Executive Officer and the APCO have the authority to review or seek enforcement action for violation of the fleet emission standard.

(2) The ARB will make available to the districts the information owners/operators have provided to ARB to demonstrate compliance with the fleet standard.

Appendix A
Default Emission Factors

Uncontrolled Emission Factors for Pre-1988 Model Year (g/hr-hr)

HP	Year	HC	CO	NOX	PM
51-120	All	1.44	4.8	13	0.84
121-175	1969	1.32	4.4	14	0.77
	1971	1.1	4.4	13	0.66
	1979	1	4.4	12	0.55
	1984	0.94	4.3	11	0.55
	1988	0.88	4.2	11	0.55
176-250	1969	1.32	4.4	14	0.77
	1971	1.1	4.4	13	0.66
	1979	1	4.4	12	0.55
	1984	0.94	4.3	11	0.55
	1988	0.88	4.2	11	0.55
251-500	1969	1.26	4.2	14	0.74
	1971	1.05	4.2	13	0.63
	1979	0.95	4.2	12	0.53
	1984	0.9	4.2	11	0.53
	1988	0.84	4.1	11	0.53
501-750	1969	1.26	4.2	14	0.74
	1971	1.05	4.2	13	0.63
	1979	0.95	4.2	12	0.53
	1984	0.9	4.2	11	0.53
	1988	0.84	4.1	11	0.53
>750	1969	1.26	4.2	14	0.74
	1971	1.05	4.2	13	0.63
	1979	0.95	4.2	12	0.53
	1984	0.9	4.2	11	0.53
	1988	0.84	4.1	11	0.53

Table 10 from ARB report: Public Meeting to Consider Approval of California's Emissions Inventory for Off-road Large Compression-ignited Engines (≥25 HP)

Uncontrolled Emission Factors for Post-1987 Model Year (g/hr-hr)

HP	Year	HC	CO	NOX	PM
51-120	88-97	0.99	3.49	8.75	0.69
121-175	88-96	0.68	2.7	8.17	0.38
176-250	88-95	0.68	2.7	8.17	0.38
251-500	88-95	0.68	2.7	8.17	0.38
501-750	88-95	0.68	2.7	8.17	0.38
>750	88-99	0.68	2.7	8.17	0.38

Table 12 from ARB report: Public Meeting to Consider Approval of California's Emissions Inventory for Off-road Large Compression-ignited Engines (≥25 HP)

PM Emission Factor For Alternative Fuel Engines

HP	Year	PM
all	all	0